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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,812	08/21/2003	Tae-Sik Oh	50871/DBP/Y35	7878

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EXAMINER	
A, MINH D	

ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/645,812	OH, TAE-SIK	
	Examiner	Art Unit	
	Minh D A	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-4, 6-9 are rejected under 35 U.S.C. 102(b) as being unpatentable by Muroyama et al (US 2004/0108515A1).

Regarding claim 1, Muroyama discloses a field emission display, comprising'. a first substrate (36)', at least one gate electrode (13) formed in a predetermined pattern on the first substrate(36), a plurality of cathode electrodes (11) formed in a predetermined pattern on the first substrate (36), the plurality of cathode electrodes (11) forming overlap regions corresponding to pixel regions with the at least one gate electrode (13)', an insulation layer (12) formed between the at least one gate electrode (13) and the plurality of cathode electrodes (11)', at least one pair of emitters (15 and 15' marked by examiner)electrically connected to the cathode electrodes (11)', a second substrate(30) opposing the first substrate(36) with a predetermined gap there-between, the first(36) and second substrates (30) forming a vacuum assembly when

interconnected', at least one anode electrode (33) formed on a surface of the second substrate(30) opposing the first substrate'(36), and phosphor layers (31) formed on the second substrate(30) electrically connected to the at least one anode electrode (33). See figures 20-21, col.1, lines [0004] to [0007].

Regarding claim 2, Muroyama discloses wherein the at least one pair of emitters (15 and 15' marked by examiner) is formed at a predetermined distance from each other and closely contacting the cathode electrode. See figure 20.

Regarding claim 3, Muroyama discloses wherein the at least one pair of emitters (15 and 15') are longitudinal and extend in a direction of the pattern of the at least one gate electrode (13). See figure 20.

Regarding claim 4, Muroyama discloses wherein the at least one pair of emitters are carbon nano-tubes. See abstract.

Regarding claim 6, Muroyama discloses, wherein each of the plurality of cathode electrodes (11) includes an opening in the overlap region and the at least one pair of emitters is formed in the opening. See figure 20.

Regarding claim 7, Muroyama discloses wherein the at least one pair of emitters formed on one of the plurality of cathode electrodes in the overlap region. See figure 20.

Regarding claim 8, Muroyama inherently discloses a metal mesh grid mounted between the first substrate and the second substrate, and including openings corresponding to the overlap regions. Because Muroyama disclose that, metal particles on the exposed surface of the cathode electrode electrically conductive layer, whereby the selective-growth region can obtained. See col.17, lines [0219] to lines [0220].

Regarding claim 9, Muroyama discloses wherein the at least one pair of emitters (15 and 15') having an insulation layer (12). See figure 20.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable by Muroyama et al (US 2004/0108515A1) in view of Ono (US 2001/0030507 A1).

Regarding claim 5, Muroyama essentially discloses the claimed invention but does not explicitly disclose that wherein the plurality of cathode electrodes are opaque.

However, Ono discloses the plurality of cathode electrodes are opaque as show on figure 5, elements (11) and col.1, lines [0003] to lines [0008].

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ an opaque electrodes such as that suggested by Ono the panel display of Muroyama to provide a highly conductively and brightness with lower power consumption at high voltage.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Haven (US 5,649,847) and Wang et al. (US 6,486,599) are cited to show a field emission display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Minh A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 –2:30 PM).

If attempts to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and (703) 872-9319 for final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (571) 272-1553.

Don Wong
Supervisory Patent Examiner
Technology Center 2800

Examiner

Minh A

Art unit 2821

11/16/04